

REMARKS***Summary of the Amendment***

Upon consideration of the instant remarks, claims 1 - 40 will remain pending and under consideration by the Examiner.

Summary of the Official Action

In the instant Office Action, the Examiner has rejected claims 1 - 39 over the art of record. By the present remarks, Applicants submit that the rejections have been overcome, and respectfully request reconsideration of the outstanding Office Action and allowance of the present application.

Traversal of Rejection Under 35 U.S.C. § 103(a)***1. Over Nagata in view of Hale and Shaffer***

Applicants traverse the rejection of claims 1 - 13, 15 -1 7, and 40 under 35 U.S.C. § 103(a) as being unpatentable over NAGATA et al. (U.S. Patent No. 6,540,447) [hereinafter “NAGATA”] in view of HALE (U.S. Patent No. 4,776,732) and SHAFFER (U.S. Patent No. 6,464,433). The Examiner asserts that NAGATA shows an indexable tip with a circumferential cutting edge, a support surface, obtuse angles and acute angles. Moreover, the Examiner asserts that the thickness of tool from support surface to acute angle is greater than from support surface to obtuse angles. The Examiner also asserts that it would have been obvious to shape the tool in a hexagonal form, as taught by HALE, and to utilize the

working part disclosed by NAGATA. Applicants traverse the Examiner's assertions.

Concurrently herewith, Applicants are submitting a verified translation of priority document A88/2001 filed January 18, 2001 in order to perfect their claim of priority.

Accordingly, because NAGATA was issued April 1, 2003 and filed March 29, 2001, the perfected priority of the instant application predates NAGATA, such that this document is not prior art against the pending claims. Applicants further submit that, as the primary document cited against Applicants' claims is not prior art, the pending rejections are render moot and must be withdrawn.

Moreover, even if NAGATA were prior art against the pending claims (which Applicants submit it is not), no proper combination of NAGATA, HALE, and SHAFFER renders unpatentable the combination of features recited in at least independent claims 1 and 40.

In particular, Applicants note that it is not apparent from the art of record that reshaping the hexagonal cutting insert of HALE in the manner shown in NAGATA and operated in the SHAFFER tool would enable NAGATA to operate in its intended manner. In particular, Applicants note that problems would appear to arise in balancing the cutting edges of the insert of NAGATA/HALE when operated in the SHAFFER device. Thus, the asserted combination would appear to create vibrations and/or prevent precision cuts intended by NAGATA.

Moreover, it is well known in the art that performance and tool life of a cutting insert is highly sensitive to geometry, and that little changes in cutting edge geometry can cause dramatically shortened tool life. Applicants note that, as the Examiner's asserted combination of documents fails to consider the adverse effects that arise through the asserted combination of NAGATA, HALE, and SHAFFER, the art of record fails to render the Examiner's asserted combination obvious.

Accordingly, Applicants submit that the asserted combination of documents fails to teach or suggest the combination of features recited in at least independent claims 1 and 40, and that instant rejections are improper and should be withdrawn.

Further, Applicants submit that claims 2 - 13 and 15 - 17 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicants submit that no proper combination NAGATA in view of HALE and SHAFFER teaches or suggests, *inter alia*, said working part is essentially cylindrical, as recited in claim 2; said indexable tip is positioned at an end of said working part remote from said clamping part, as recited in claim 3; said working part comprises a flute running in a direction of a tool axis and a form-locking seat for said indexable tip, as recited in claim 4; when said indexable tip is seated on said working part, at least one cutting edge slightly projects from said working part, as recited in claim 5; said flute running in a direction of said tool axis is formed with a twist,

as recited in claim 6; said hexagonal shape of said indexable tip comprises alternately obtuse and acute corner angles and six straight cutting edges, as recited in claim 7; a greatest width of said indexable tip is at least 0.92 times a diameter of said working part, as recited in claim 8; said at least one cutting edge comprises three cutting edges, and a trajectory of at least a part of one of said three cutting edges projects slightly beyond an outer contour of said working part, as recited in claim 9; said base body comprises at least one bore for inserting at least one of coolant and lubricant, and an exit of said at least one bore is directed at said indexable tip, as recited in claim 10; said exit of said at least one bore is obliquely arranged relative to a tool axis, as recited in claim 11; said exit of said at least one bore is arranged at an angle between 15° and 75° to said tool axis, as recited in claim 12; said exit of said at least one bore is arranged at an angle between 25° and 45° to said tool axis, as recited in claim 13; said at least one cutting edge comprises a plurality of cutting edges arranged to form acute angled corners having an angle of $88^\circ \pm 1.7^\circ$, as recited in claim 15; said at least one cutting edge comprises a plurality of cutting edges arranged to form acute angled corners having an angle of $88^\circ \pm 0.3^\circ$, as recited in claim 16; a front cutting edge of said indexable tip forms an angle of $89.8^\circ \pm 0.5^\circ$ with an axis of tool rotation, as recited in claim 17.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claims 1 - 13, 15 - 17, and 40 under 35 U.S.C. § 103(a) and indicate that these claims are allowable.

2. *Over Nagata in view of Hale and further in view of Arai*

Applicants traverse the rejection of claim 14 under 35 U.S.C. § 103(a) as being unpatentable over NAGATA in view of HALE and further in view of ARAI et al. (U.S. Patent No. 5,460,464) [hereinafter “ARAI”].

Applicants submit that, as the primary document cited against Applicants’ claims has been shown not to be prior art, the pending rejections have been rendered moot and must be withdrawn.

Applicants further submit that ARAI fails to teach or suggest the subject matter noted above as deficient in both NAGATA and HALE. That is, Applicants submit that ARAI fails to teach or suggest any manner for modifying NAGATA to include the indexable tip of HALE, since, as discussed above, merely changing the cutting insert geometry would have deleterious effects on the apparatus.

Because none of the applied documents teach or suggest at least the above-noted features of the invention, Applicants submit that no proper combination of these documents can render the instant invention obvious under 35 U.S.C. § 103(a). Accordingly, Applicants request that the Examiner reconsider and withdraw the instant rejection.

Moreover, Applicants note that, in contrast to NAGATA, ARAI is directed to a milling insert, not a drilling insert. Thus, as these two inserts are intended for wholly distinct purposes, Applicants submit that the art of record fails to provide the requisite motivation or

rationale for combining these dissimilar elements in the manner asserted by the Examiner, such that the asserted combination of documents is improper and should be withdrawn.

Further, Applicants submit that claim 14 is allowable at least for the reason that it depends from an allowable base claim and because it recites additional features that further define the present invention. In particular, Applicants submit that no proper combination of NAGATA in view of HALE and ARAI teaches or suggests, *inter alia*, said indexable tip comprises a center hole and the center hole of said indexable tip is eccentrically positioned outside a center of said working part, as recited in claim 14.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claim 14 under 35 U.S.C. § 103(a) and indicate that this claim is allowable.

3. Over Nagata in view of Hale

Applicants traverse the rejection of claims 18 - 33 and 39 under 35 U.S.C. § 103(a) as being unpatentable over NAGATA in view of HALE.

As NAGATA is not prior art against the pending claims of the instant application, Applicants submit that the pending rejections are rendered moot and must be withdrawn.

Moreover, as discussed above, it is not apparent from the art of record that reshaping the hexagonal cutting insert of HALE in the manner shown in NAGATA would enable NAGATA to operate in its intended manner. In particular, Applicants note that problems would appear to arise in balancing the cutting edges of the insert of NAGATA/HALE, which

would appear to create vibrations and/or prevent precision cuts intended by NAGATA.

It is also well known in the art that performance and tool life of a cutting insert is highly sensitive to geometry, and that little changes in cutting edge geometry can cause dramatically shortened tool life. Applicants note that, as the Examiner's asserted combination of documents fails to consider the adverse effects that arise through the asserted combination of NAGATA and HALE, the art of record fails to render the Examiner's asserted combination obvious.

Accordingly, Applicants submit that the asserted combination of documents fails to teach or suggest the combination of features recited in at least independent claim 18, and that instant rejection is improper and should be withdrawn.

Further, Applicants submit that claims 19 - 33 and 39 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicant submits that no proper combination of NAGATA and HALE teaches or suggests, *inter alia*, said cutting tool is structured for the machining of metals and alloys, as recited in claim 19; an attachment device formed as a center hole, as recited in claim 20; said cutting edges are arranged to form alternately acute-angled corners and obtuse-angled corners, as recited in claim 21; said cutting edges form acute angled corners having an angle of $88^\circ \pm 1.7^\circ$, as recited in claim 22; said acute angled corners are $88^\circ \pm 0.5^\circ$, as recited in claim 23; said

acute angled corners are $88^\circ \pm 0.3^\circ$, as recited in claim 24; said cutting edges are oriented at an angle of between 2° and 10° to said supporting area, as recited in claim 25; said cutting edges are oriented at an angle between 4° and 8° to said supporting area, as recited in claim 26; said cutting edges are oriented at an angle of $7^\circ \pm 0.5^\circ$ to said supporting area, as recited in claim 27; a part of said face immediately bordering said cutting edge forms an angle of between 2° and 18° with said supporting area, as recited in claim 28; a part of said face immediately bordering said cutting edge forms an angle of between 4° and 12° with said supporting area, as recited in claim 29; a part of said face immediately bordering said cutting edge forms an angle of between 5° and 10° with said supporting area, as recited in claim 30; the open spaces form an angle of between 5° and 12° with a straight line normal to said supporting area at said cutting edges, as recited in claim 31; the open spaces form an angle of between 6° and 11° with a straight line normal to said supporting area at said cutting edges, as recited in claim 32; the open spaces form an angle of $7^\circ \pm 0.5^\circ$ with a straight line normal to said supporting area at said cutting edges, as recited in claim 33; and said corners are rounded off, as recited in claim 39.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claims 18 - 33 and 39 under 35 U.S.C. § 103(a) and indicate that this claim is allowable.

4. *Over Nagata in view of Hale and further in view of Enderle*

Applicants traverse the rejection of claims 34 - 38 under 35 U.S.C. § 103(a) as being unpatentable over NAGATA in view of HALE and further in view of ENDERLE (U.S. Patent No. 5,876,154).

Again, Applicants note that, as NAGATA has been shown not to be prior art against the pending claims in the instant application, the pending rejections are rendered moot and must be withdrawn.

Applicants further submit that ENDERLE fails to teach or suggest the subject matter noted above as deficient in both NAGATA and HALE. That is, Applicants submit that ENDERLE fails to teach or suggest any manner for modifying NAGATA to include the indexable tip of HALE, since, as discussed above, merely changing the cutting insert geometry would have deleterious effects on the apparatus.

Because none of the applied documents teach or suggest at least the above-noted features of the invention, Applicants submit that no proper combination of these documents can render the instant invention obvious under 35 U.S.C. § 103(a). Accordingly, Applicants request that the Examiner reconsider and withdraw the instant rejection.

Further, Applicants submit that claims 34 - 38 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicant submits that no

proper combination of NAGATA, HALE and ENDERLE teaches or suggests, *inter alia*, the open spaces are divided into at least two sections comprising a first section, bordering the cutting edges, forming an angle of between 5° and 12°, and a second section, bordering said supporting area, forming an angle of between 12° to 25° with a straight line normal to said supporting area, as recited in claim 34; said first section forms an angle of between 6° and 11°, as recited in claim 35; said first section forms an angle of 7° ± 0.5°, as recited in claim 36; said second section forms an angle of between 14° and 22°, as recited in claim 37; said second section forms an angle of 15° ± 0.5°, as recited in claim 38.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claims 34 - 38 under 35 U.S.C. § 103(a) and indicate that this claim is allowable.

Application is Allowable

Thus, Applicants respectfully submit that each and every pending claim of the present invention meets the requirements for patentability under 35 U.S.C. §§ 102 and 103, and respectfully request the Examiner to indicate allowance of each and every pending claim of the present invention.

Authorization to Charge Deposit Account

The undersigned authorizes the charging of any necessary fees, including any extensions of time fees required to place the application in condition for allowance by Examiner's Amendment, to Deposit Account No. 19 - 0089 in order to maintain pendency

of this application.

CONCLUSION

In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious the Applicants' invention, as recited in each of claims 1 - 40. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Further, any amendments to the claims which have been made in this response and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be appropriate.

Respectfully submitted,
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